FRD ACTIVITIES REPORT
January - March 2016

RESEARCH PROGRAMS

Project Sagebrush

FRD has firmed up its plans for Project Sagebrush Phase 2 (PSB2). An initial set of daytime light-wind releases is planned for 25 July through 10 August 2016. Based on observations near the tracer release point, the 1300-1500 MDT time window is the best target for light-wind releases in unstable conditions. The most likely wind direction during the testing window is from about 200°, so the tracer sampling array will be centered on 20° from north. To keep concentrations within instrument limitations, SF_6 release rates of 0.15-0.20 g s^{-1} appear to be a good target for these daytime releases. A second set of nighttime tests is planned for 12-28 October 2016. These will start around 0500 MDT. The wind direction distribution during the night testing period has two modes, both SW and N, so the best sampler orientation for the October period has not yet been settled on. The likely SF_6 release rates for the night tests will be about 10% of those for the afternoon tests. (Richard.Eckman@noaa.gov, Kirk Clawson, Dennis Finn, Roger Carter)

As part of the early preparations for Project Sagebrush 2 (PSB2), the air samplers are being checked, repaired, and readied for use in the project. This should be completed in early April. Checking and testing of fast response analyzers and gas chromatographs will begin in April, along with a number of other activities. (Roger.Carter@noaa.gov, Jason Rich, Dennis Finn)

Approval was received for funding the acquisition of a mobile trailer/tower system. An RFQ will be issued early in the third quarter. Plans call for using the tower during the upcoming Project Sagebrush 2 field experiments beginning in late July.

The manuscript *Project Sagebrush: Revisiting the Value of the Horizontal Plume Spread Parameter* σ_y was accepted for publication in the Journal of Applied Meteorology and Climatology. Additional papers related to this project are pending.

Birch Creek Valley Wind Flow Study

The manuscript *Evidence for gap flows and the topographic amplification factor in the Birch Creek Valley, Idaho* was submitted to the Journal of the Atmospheric Sciences. Reviews were received in March and revisions and responses to reviewer comments are in progress. (Dennis.Finn@noaa.gov)

Wind Forecast Improvement Project (WFIP2)

An ongoing discussion has developed in the WFIP2 community regarding how vertical fluxes should be computed from the project's turbulence measurements. There is a desire to have the various groups collecting data to use a common set of assumptions in computing the fluxes, in particular a common averaging time. Otherwise, it will be more challenging to compare observations from different groups.

Part of the discussion has revolved around whether a specific averaging time best matches the assumptions in numerical models such as WRF. Currently, there are many who want to compute fluxes using both 15 and 5 minute averaging times. Some researchers recommend the shorter time for stable conditions. FRD can adapt its own flux data processing to meet the requirements that are settled on. (Kirk.Clawson@noaa.gov, Rick Eckman)

ARL Convective Initiation Project

The Convective Initiation project in its original form formally ended at the end of this quarter. All of the large-eddy simulations that were planned for the project have been completed. These simulations examined the effects of horizontal variations of surface fluxes on convective development. Mike Buban gave a presentation on the simulations at the January 2016 American Meteorological Society Annual Meeting in New Orleans. Further formal publications describing the simulations are in preparation. The work started under this project will likely continue as part of the VORTEX SE project. (Michael.Buban@noaa.gov, ATDD; Rick Eckman)

HYRad

The INL Emergency Operations Center hazardous assessment staff made revisions to several radiological release scenarios that prompted the need for some changes in HYRad. These included the addition of more isotopes in the dose conversion factor table, increasing the number of individual concentrations and depositions that could be separately plotted, and increasing the maximum duration of a possible release to 96 hours. The changes allowed for the possibility of much longer model run times, especially if the multiple source capability is used. The tradeoffs involved were discussed with the EOC personnel along with possible ways to mitigate this (e.g., use of the proxy capability). (Dennis.Finn@noaa.gov, Brad Reese)

NOAA/INL Mesonet Radio Interference

Radio frequency interference continued to be a problem for the NOAA/INL Mesonet telemetry system during January and into February. We continued to work with Idaho Falls Power and consulted with a number of outside companies. Power Engineers in Boise, Idaho suggested a tool that Idaho Falls Power could use to look for the problem. Idaho Falls Power eventually accepted their suggestion and was able to track the problem to a defective lightning arrestor. This was replaced on Feb. 3 and we have had no more problems. Unfortunately, the engineers erroneously thought that the lightning arrestors had been replaced a few months earlier and were ignoring it as a possible interference source. The miscommunication cost a lot of time and effort. (Roger.Carter@noaa.gov, and Shane Beard)

NOAA/IDAHO NATIONAL LABORATORY (INL) METEOROLOGICAL RESEARCH PARTNERSHIP

NOAA Work Procedures

An inquiry by DOE-ID into NOAA's work procedures was begun during the reporting quarter. The inquiry is focused particularly on tower climbing practices and on electrical safety. The inquiry is being led by Richard Kauffman and is the result of comments DOE-ID received from Battelle Energy Alliance, who is the INL M&O contractor.

At the request of DOE-ID, the NOAA Field Research Division safety manual was provided for review by DOE-ID. After review, it was determined by DOE-ID that an on-site inspection was necessary. Accordingly, on February 23, Shane Beard, Donna Davis, and Kirk Clawson met with DOE-ID colleagues Betsy Holmes, Richard Kauffman, and Teresa Perkins for the inspection. They were joined by a team of experts from DOE-ID and BEA. Five NOAA/INL mesonet stations were visited: Monteview, SMC, Howe, Lost River Rest Area, and RWMC. The purposes of the inspections were to: 1) Observe housekeeping, electrical conditions, and general safety, 2) Discuss working at heights and observe associated equipment, 3) Obtain common understanding of NOAA work control, NOAA application of electrical codes, NOAA application of safety requirements, and interfaces for work within NOAA field sites, 4) Identify if imminent hazards exist, and 5) Identify any concerns with site conditions or work control that need to be addressed.

The purposes of the site visits were fully met. No imminent hazards were determined to exist. A verbal summary at the end of the visits indicated that the climbing procedures were adequate (pending additional review) and that electrical safety was being practiced according to electrical code in place at the time of installation. Formal reports are expected in the future. Several outstanding issues were resolved, including: 1) Snow removal around the SMC tower was discussed and Scott Lee volunteered to install a barrier to guide the snow plows so that instrumented areas are avoided, 2) Snow removal at Grid 3, when necessary, will be arranged by NOAA through Scott Lee, 3) the access road into the Base of Howe Peak station will be repaired when the weather permits to eliminate the possibility of a vehicle becoming high-centered, 4) the electricity delivery fixtures at RWMC will be replaced by BEA to remove the existing safety hazard.

Subsequent meetings and discussions have been held as a result of the site visits. An outstanding item being researched by DOE-ID is the management of all NOAA/INL mesonet station land leases by DOE-ID. New issues that were identified include: 1) interfacing with the INL Plan of the Week, 2) Developing an interface agreement with the various groups that place equipment at the mesonet stations, and 3) Field worker notification. NOAA Field Research Division has agreed to 1) provide their plan of the week Betsy Holmes, 2) develop an interface agreement, and 3) ensure that field worker notifications are in place for NOAA personnel according to INL stipulations.

NOAA/INL Mesonet Equipment Upgrade

We have continued testing VHF radios that are possible replacements and upgrades for the radios currently used on the NOAA/INL Mesonet. A temporary repeater site was established on the foothills southeast of Idaho Falls for the Esteem radio modems we purchased last fall. This allowed us to do testing for a couple weeks. We have also made arrangements for two other companies to loan us radios for testing this spring. (Roger.Carter@noaa.gov, and Shane Beard)

Annual ASER Wind Statistics

Each year FRD receives a request from the INL to generate a set of wind statistics for the prior calendar year at a subset of the NOAA/INL Mesonet towers. These statistics files are similar to wind roses and are used for INL regulatory compliance. This year was somewhat different in that the INL also requested ten-year statistics for the towers. Processing the data to obtain ten-year statistics required the creation of additional software, but the request was completed using data from 2006 to 2015. Preparations also started during the quarter to create the material required for the 2015 INL Annual Site Environmental Report. Much of the work for the annual report takes place in the third quarter, including running a dispersion model to compute annual concentration statistics. (Richard.Eckman@noaa.gov)

Emergency Operations Center (EOC)

Team A participated in a requalification drill at the EOC on19 January. The drill centered on a boiler plant explosion at MFC. Nowcasts and short term and weather forecasts were issued. (Jason.Rich@noaa.gov)

Team D participated in a drill at the EOC on 16 February. The scenario involved chemical exposure within a building and did not require any plume modeling. (Richard.Eckman@noaa.gov)

INL Climatology

Work has started on a new edition of the INL Climatology. The fourth edition will include climatological data updated through December 2015. This new edition will include new analyses and resulting insights on winds and temperatures aloft derived from remote sensing systems, channeled wind flows, statistical wind field groupings, precipitation return periods, and evapotranspiration. (Jason.Rich@noaa.gov and Kirk Clawson).

INL Winter Safety Forum

Shane Beard, Brad Reese, Roger Carter, Jason Rich and Matt Brewer attended Fall Prevention Training in Pocatello during the 7th annual Safety Fest of the Great Northwest. (April 6)

INL Hazardous Weather Alert System

Two hazardous weather statements were issued specifically for the INL last quarter. Both of these statements were issued for high winds. (Jason.Rich@noaa.gov)

Fiber Optic Cable

A 1 Gigabit Internet fiber optic cable was installed in the FRD office complex during the quarter. The cable is connected to a 10 Gigabit fiber optic ring that has greatly improved data upload and download speeds. For example, some of the datasets needed to run FRD's local weather forecast model (WFR) that used to require up to 30 minutes to download, can now be obtained in under a minute.

OTHER ACTIVITIES

Safety

At January's staff meeting a presentation on OSHA training requirements were viewed at www.osh.gov.

Joe Nichols, an inspector with the Idaho Falls Fire Department, completed the Fire Safety Survey Report for our facility in February. No violations noted.

A Dose of Reality, a video on prescription drugs in the workplace was viewed at the March staff meeting.

Travel

Kirk Clawson, Rick Eckman, and Matt Brewer attended the AMS Conference in New Orleans, LA January 10-14.

Kirk Clawson, Jason Rich, and Donna Davis attended the Pocatello NWS WFO annual weather briefing and chili cook-off in February.

Roger Carter and Shane Beard traveled to Kennewick, WA to attend Esteem Wireless Modem training, March 8-10.

Matt Brewer traveled to Boulder, CO March 27-31 to collaborate with scientists at ESRL and NREL.

Training

Donna Davis participated in the Inventory Training webinar on January 14th.

Donna Davis also participated in the Excess and Disposal webinar on February 4th.

Hollie Gilbert, INL Historical Archaeologist and Professional Historian, gave an INL cultural awareness presentation during our February 9th staff meeting.

The National Safety Council presented a webinar on Prescription Drug Abuse in the Workplace, in which Donna Davis participated.

Roger Carter and Shane Beard completed Esteem radio modem training on March 9.

All employees completed the Annual Security Briefing for Uncleared Employees during the month of March.

Miscellaneous

FRD received the "Highest Participation" award in the Small Agency category for the state of Idaho for 2015 Intermountain Combined Federal Campaign.